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Some remarks on COST-728 case studies

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COST-728: two common case studies

- Case 1 (P.Builtjes)
 - 2003: series of strong PM episodes over Germany Feb-March (Peter Builtjes)
 - seasonal variability of PM and photooxidants (met.influence) during 2003
 - Fires 2003 in the southern Europe in August (Sweden???) (Ana Miranda)
 - Saharan dust transport in August
 - process studies: ABL, local circulations, vertical structure... long-term run is complicated, focus on periods with detailed analysis. Possibly, period of forest fires, which might coincide with dust-transport
 - 2 sub-periods(??) Feb-Mar, Aug
- Case 2 (M.Sofiev)
 - April-May 2006: early-spring strong multi-pollutants episode caused by various sources synchronised by the meteorological developments over Central and Northern Europe (south?)
 - August 2006 – regional fires Finl-Est. with narrow plumes
 - Studies so far: a couple of single-model papers investigating early stages of the episode
- Preparation to-date: an orientation document circulated, list of interested groups collected (but still open)

Steps for the case study to happen

- For each case
 - Purpose of the study: what we will be looking for (apart from the best-possible m-o comparison, whatever it means)
 - List of participants
 - List of common data to be shared and harmonised and list of model-own datasets
 - 2003: emission-2000 common (PB), fire emis (AM, backup MS from GEMS): basic species
 - reforecast of HIRLAM 6.3.5 for 3 years, 2003 is inside: a reference dataset
 - 2006: fires basic species, EMEP-2004 (GEMS TNO database – check with Vincent-Henry), reference HIRLAM for 2006 (check with FMI HIRLAM)

Steps 2: data processing protocol

- comparison with observations
 - “standard”
 - “meso-scale” (testbed, LAPS, ...)
 - ??? WG 4 ???
- model inter-comparison
 - time series
 - patterns
 - ??? WG 4 ???
- ensemble building
 - “standard” median
 - ???

Steps 3: data exchange protocol

- A derivative from data processing
- comparison with observations: time series for specified sites
- model inter-comparison
 - time series: same as those of observations
 - patterns: maps in some common format
- ensemble building: maps in some common format

Steps 4: data and processing

- Central repository
 - keeps and shares the common data
 - Metadatabase; coordinators should know where the data are
- Data processing by individual groups
 - comparison with observations
 - list of indicators of performance is to be agreed in advance
 - statistical metrics are to come from WG4
- Central processing site
 - model inter-comparison
 - at least for the measurement points; more up to sub-case
 - ensemble building
 - up to each sub-case and tem participating (lead by coordinators of the sub-cases)

Steps 5: data analysis

- the main scientific part of the exercise
- derivative of the purpose of the specific case study
- highlight the processes responsible for the case and their representation by the models
- evaluate the methodology of multi-model ensemble analysis: how did it work for the current exercise?

Steps 6: data gathering

- Emission
 - e.g. EMEP as a common ground
 - national extensions – open for everyone or restricted
 - non-standard sources (fires, pollen, ...), if any, – from producers
- Meteorology
 - model-own
 - some datasets can be made available by participants, put to repository and considered as a common / central / reference /...
 - a flavour of “standard” production system behind
 - more than one team should be able to use it
- Observations
 - international databases and networks (AEROCOM, AERONET, AirBase, EMEP, ...)
 - national networks – have to be approached by the study participants

Steps 7: gathering of tools

- Inventing a wheel is entertaining but time-consuming...
- A derivative of processing centre selection (several options are under consideration)
 - Comparison with measurements
 - Inter-comparison of models
 - Ensemble building
 - Visualization

Synergy with other works

- Models do not run for free...
- Whole 2003 is the test period for EU-GEMS project
- Summer 2006 is the test period for ESA-PROMOTE (IAQ service)
- Related projects
 - COST ENCWF kick-off meeting (European Network on Chemical Weather Forecasting): April 2007
 - Finnish-Russian Fire Assimilation System development project, 2006 fires will be used as test case
 - [EURODELTA](#), [city-delta](#), [HTAP](#)
 - (inter-)national projects with financing for specific groups ⇒ consequences to study purposes and goals
- ...

Current steps

- Target: discussion of (some) results at workshop in Hamburg (6-7.09.2007)
 - summary and specific results (problems to learn from) of on-going individual case studies
 - whatever exists for the joint case studies
 - discussion of the evaluation protocol
- done: specification of the **joint** test cases to be issued by case coordinators
- **Procedures have been set up; those who can join later can join. Cases are open within the reasonable time. Aim is to start the runs in May**
- **Discussion with ENSEMBLE team @ JRC to use their tools for ensemble building and analysis**